

## Claims

1. A push back storage rack system for storing multiple loads in a single inclined cart lane comprising:

a storage rack structure forming a single inclined cart lane having a loading end at a lowest part of the inclined cart lane, a storage end at a highest part of the inclined cart lane, and a support beam located at said loading end of said inclined cart lane;

a plurality of carts including a first cart having a structure which enables it to carry and move at least one load in said cart lane, said first cart including a leading end and a trailing end, said leading end of said first cart always being positioned farther away from said loading end of said inclined cart lane than said trailing end of said cart is positioned, said first cart having at least two parallel and elongated side plates, a leading cross piece extending between said side plates at about the leading end of said first cart, said cart contacting said support beam when said first cart is at said loading end of said inclined cart lane;

at least one higher cart having a structure which enables said at least one higher cart to carry and move at least one load in said cart lane and causes said at least one higher cart to be spaced to a higher vertical position than said first cart, said at least one higher cart having a leading end and a trailing end, said leading end of said at least one higher cart always being positioned farther away from said loading end of said inclined cart lane than said trailing end of said at least one higher cart is positioned, said at least one higher cart having at least two parallel and elongated side plates;

a leading cross piece extending between said side plates at about said leading end of said at least one higher cart, said leading cross piece of said at least one higher cart being positioned to contact a cart beneath it, said at least one higher cart when both said at least one higher cart and

the cart beneath it are at the loading end of said inclined cart lane, so that the load of said at least one higher cart is transferred through said first cart to said support beam.

2. The push back storage rack system of claim 1 in which said leading cross piece of said  
5 at least one higher cart contacts the cart beneath it at about a leading cross piece of a cart beneath it so as to restrict the movement toward said loading end of said inclined cart lane of said at least one higher cart.

3. The push back storage rack system of claim 1 in which said leading cross piece of each  
10 of said at least one higher cart is positioned to contact the cart immediately beneath it at about a leading cross piece of the cart immediately beneath it when both said at least one higher cart and the cart immediately beneath it are at about the loading end of said inclined cart lane.

4. The push back storage rack of claim 1 in which said leading cross piece of said at least  
15 one higher cart is positioned to restrict movement of said at least one higher cart toward said loading end of said inclined cart lane by contacting said leading cross piece of a cart beneath it, and the structure of said plurality of carts prevents said first cart and said at least one higher cart from contacting each other at their trailing ends when said first cart and said at least one higher cart are at about said loading end of said inclined cart lane.

20 5. The push back storage rack system of claim 1 further comprising:  
an elongated stop flange extending along at least a portion of the length of the inclined cart lane;

at least one vertically reaching extension mounted on at least one of said plurality of carts, said extension having a locking surface extending therefrom and under said stop flange so that said locking surface is vertically spaced from said stop flange and positioned to restrict vertical lifting of said at least one of said plurality of carts.

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6. The push back storage rack system of claim 1 further comprising:

at least one first substantially horizontal flange mounted along the length of said first cart and extending outwardly therefrom;

at least one second substantially horizontal flange mounted along the length of said at least one higher cart and extending inwardly therefrom;

said at least one first substantially horizontal flange positioned to restrict vertical movement of said at least one second substantially horizontal planar stop flange, thereby restricting vertical movement of said at least one higher cart.

7. The push back storage rack system of claim 1 further comprising:

an elongated stop flange extending along at least a portion of the length of the inclined cart lane;

at least one vertically reaching extension mounted on said first cart, said extension having a locking surface extending therefrom and under said stop flange so that said locking surface of said extension is vertically spaced from said stop flange to restrict vertical movement of said extension and thus said first cart;

at least one first substantially horizontal flange mounted along the length of said first cart and extending outwardly therefrom;

at least one second substantially horizontal flange mounted along the length of a second cart immediately above said first cart and extending inwardly therefrom;

said first substantially horizontal flange positioned to restrict vertical movement of said second substantially horizontal flange and the said second cart.

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8. The push back storage rack system of claim 1 wherein said at least one higher cart comprises a plurality of carts, each of said plurality of carts being constructed to be longer than the cart immediately beneath it.

9. The push back storage rack system of claim 1 wherein said at least one higher cart comprises a plurality of carts, each of said plurality of carts being constructed to be wider and longer than the cart immediately beneath it.

10. The push back storage rack system of claim 1 further comprising:  
a pair of parallel, elongated tracks in said cart lane, each of said tracks having a substantially rectangular, planar upper support surface, each of said upper support surfaces having an inner edge and an outer edge, said tracks being positioned along the length of said cart lane and positioned at a slight incline from horizontal so that the lowest part of each track is positioned near the loading end of said cart lane and the highest part of each track is positioned toward the storage end of said cart lane;

at least one leading wheel and at least one trailing wheel extending from a first side plate of said first cart, both said leading and trailing wheels of said first side plate of said first cart being positioned to roll along an inner edge of one of said tracks, at least one leading wheel and at

least one trailing wheel extending from a second side plate of said first cart, both said leading and trailing wheels of said second side plate of said first cart being positioned to roll along only an inner edge of the other of said tracks;

at least one leading wheel and at least one trailing wheel extending from a first side plate of a cart immediately above said first cart, both said leading and trailing wheels extending from said first side plate of said cart immediately above said first cart being positioned to roll along only the outer edge of one of said tracks, at least one leading wheel and at least one trailing wheel extending from a second side plate of said cart immediately above said first cart, both said leading and trailing wheels of said second side plate of said second cart being positioned to roll along only the outer edge of the other of said tracks.

11. The push back storage rack system of claim 1 in which each said side plate further comprising an angle plate having an upper section with a major elongated length and a substantially planar upper surface and having a side section with a major elongated length and a substantially planar side surface, said upper section and said side section of each said side angle plate interconnected at about a 90° angle along the major elongated lengths of said sections.

12. The push back storage rack system of claim 1 further comprising:

said first cart having a trailing cross piece extending between said side plate, a push plate mounted on said trailing cross piece of said first cart, said push plate having a substantially planar lower surface for contacting said support beam and a substantially planar upper portion, said upper portion of said push plate being bent slightly from vertical and leaning away from said first cart to provide clearance between said upper portion of said push plate and each of said at least one higher

cart when said first cart and each of said at least one higher cart are at the loading end of said inclined cart lane.

13. A push back storage rack system for storing multiple loads in a single inclined cart lane  
5 comprising:

a storage rack structure forming a plurality of inclined cart lanes, each said inclined cart lane having a loading end at about a lowest part of the inclined cart lane, a storage end at about a highest part of the inclined cart lane, and support from a support beam located at about said loading ends of said inclined cart lanes;

10 each said cart lane having a plurality of carts including a first cart having a structure which enables it to carry and move at least one load in said cart lane, said first cart including a leading end and a trailing end, said leading end of said first cart always being positioned farther away from said loading end of said inclined cart lane than said trailing end of said cart is positioned, said first cart having at least two parallel and elongated side angle plates, a leading cross piece extending between  
15 said side angle plates at about the leading end of said first cart, said cart contacting said support beam when said first cart is at said loading end of said inclined cart lane;

at least one higher cart having a structure which enables said at least one higher cart to carry and move at least one load in said cart lane and causes said at least one higher cart to be spaced to a higher vertical position than said first cart, said at least one higher cart having a leading  
20 end and a trailing end, said leading end of said at least one higher cart always being positioned farther away from said loading end of said inclined cart lane than said trailing end of said at least one higher cart is positioned, said at least one higher cart having at least two parallel and elongated side angle plates;

a leading cross piece extending between said side angle plates at about the leading end  
of said at least one higher cart, said leading cross piece of each said at least one higher cart being  
positioned to contact a leading cross piece of a cart beneath it when both said at least one higher cart  
and the cart beneath said at least one higher cart are at about the loading end of said inclined cart lane,  
5 so that the load of said at least one higher cart is transferred through said first cart to said support  
beam.

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